



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

II.—*Aufenthalt und Reisen in Mexico.* [Residence and Journeys in Mexico between the Years 1825 and 1834, &c.] By JOSEPH BURKART. Stuttgart. 1836. Communicated by MAJOR CHARTRES.

THE vast extent of country comprehended under the name of Mexico is still almost unknown to Europeans in a scientific point of view. The great range of mountains stretching from the river Santiago towards the N., following the line of coast, and inhabited by the Guicholes Indians, has never been explored. Of the manners, customs and language of that tribe we have only a very scanty knowledge. The states of Sonora, Sinaloa, and Chihuahua, have attracted little notice ; and the vast extent of country between New Mexico and the United States of America, along the course of the Rio Bravo del Norte, has only been visited by the traders who pass over those regions on their annual journies from Franklin, on the Missouri, to the Mexican Republic. These few hints may possibly help to direct the attention of travellers to large tracts of country which, as far as physical geography is concerned, may fairly be considered as ground wholly unexplored.

M. Burkart, in the work now before us, has given the result of observations made during a residence of nine years in Mexico. He traversed the country, within a limited space, in various directions, both in his professional character as a manager of mines, in which business he was employed at different times by two English Companies ; and, when his immediate duties permitted, he travelled with the direct view of acquiring a more accurate knowledge of the country, and of imparting new information respecting it, particularly with relation to its geology and physical geography. He brought into the field that degree of knowledge which generally belongs to a well-educated German miner, with great perseverance and accuracy of observation ; and his work contains a mass of information far exceeding in value anything that has appeared on the same subjects since the travels of Humboldt.

His first destination was Tlalpujahua,* as he had been engaged as chief miner by the company bearing that name, and he reached that place from Europe by way of Tampico.

In his journey from the coast he experienced the want of a good travelling map, which suggested to him the idea of constructing one ; and with this object in view, he made use of all the means in his power to collect materials during his journies and residence in the country. The result has been a road-map, in which the

* N.W. of Mexico : Tlalpujahwa (Tlalpukáwa) in our map ; *x* and *j* having the same sound in Spanish.—ED.

rivers, streams, towns, villages, farms, single houses, &c., are laid down : it includes 6 degrees of latitude, and $8\frac{1}{2}$ of longitude. In the centre of this map is Guanaxuato, which point was fixed by Humboldt in $21^{\circ} 0' 5''$ N. lat., and $100^{\circ} 54' 38''$ W. long. The author very candidly mentions that his means of laying down positions were limited, with a few exceptions, to compass-bearings corrected by latitudes ; but it is to be regretted that the mountain ranges are not indicated on his map.

The author gives a minute description of the district of Tlalpujahua, its geology and mineral productions. His next journey is from Tlalpujahua by Tula to Atotonilco el Chico, Real del Monte, and Pachuca ; and he gives a detailed account of the group of mountains in which these mining establishments are situate.

In the course of different journeys M. Burkart visited the extinct volcano of Toluca, and the active one of Jorullo, with the country lying in its neighbourhood. In the spring of 1828 he quitted the service of the Tlalpujahua Company, after which he went to the Capital, and from thence to the mining districts of Zimapán, Pechuga, San Jozé del Oro, and then by Queretaro and Zelaya to Guanaxuato. He afterwards travelled over the country lying between Guanaxuato and Zacatecas, visiting in his way the warm-springs of Aguas Buenas and Comanilla—and the towns of Leon, Lagos and Aguas Calientes, thence proceeding by the mines of Asientos de Ibarra to Zacatecas.

Shortly after his arrival in that town, in the summer of 1828, he entered into the service of the Bolaños Mining Company, and proceeded to their establishment at Veta Grande, as chief miner of that district. He continued in this capacity for seven years, and has given a very full account of the mines under his charge, accompanied by tables showing their expense and produce during a period of eight years, and a geological map of the district of Zacatecas, with various sections of the ground. While in the employment of the Bolaños Company he made several journeys, and visited the mining districts of Fresnillo, Bolaños, Ramos, Catorze, Charcas, Mazapil, &c., all of which he describes with minute detail. He also gives a very interesting section of the country lying between San Blas on the Pacific and Tampico on the Atlantic. The line of this section lies between $21^{\circ} 30'$ N. and 23° N., and shows in a very satisfactory manner the levels of this part of the Mexican table-land from sea to sea.

A few extracts from this work, relating more particularly to physical geography, will give some idea of its value and of the information it conveys :—

"The Nevado, or Snowy Mountain, called also the Volcano of Toluca, a few leagues W.S.W. of the small town of Toluca, lies, according to

Humboldt, in $19^{\circ} 11' 33''$ N. lat., and $104^{\circ} 6' W.$ of Greenwich,* and 15,263 feet above the sea. On the northern side, at the foot of the Nevado, and at the distance of some leagues from it, is seen the river Lerma, flowing from E. to W. In this direction the lower slopes of the mountain lose themselves imperceptibly in the valley of the Lerma, near the Hacienda of La Huerta, about 2 leagues to the westward of Toluca. The Lerma valley, to the N. of the Nevado, as also E. and W. of that direction, to the distance of more than 25 leagues, is several leagues wide, so that the appellation of an elevated plain is very appropriate: on it are seen the towns of Toluca, Lerma, and Ixtlahuaca, besides several villages and large farms. From the Hacienda de la Huerta, which lies directly N., and at the foot of some lower hills surrounding the Nevado, the distance to the Snowy Mountain, in a direct line, is about 3 leagues. The elevated plain extends itself to the N. and E. from the Hacienda, which, at about 2 leagues N. of La Huerta, is cut by a range of low hills. Many of these, as well as several other isolated ones, assume the form of truncated cones. To the N. and E. the base of the Nevado reaches almost immediately down to the plain: to the S. and W., however, its slopes are connected with important branches of the Cordillera. Fifteen leagues to the N., on the right bank of the Lerma, and directly opposite, is the Cerro de Hacotitlan, a dome-shaped mountain of considerable elevation, and commanding a very extensive view.”—p. 186, vol. i.

In his description of his ascent of the Nevado he remarks that the limit of vegetation was at 13,405 feet, after which commenced the line of perpetual snow: this line changes according to the seasons, being generally lowest in the month of January, and highest in September and October. After suffering much fatigue, he found himself on the edge of the crater, 15,076 feet high: this edge was here very narrow, and its interior slope from 35° to 37° . Some rocks, called Los Frayles, form at this point the most elevated summit of the mountain, which is 15,263 feet. The crater is divided into two unequal parts by hills: each of these parts contained water, which stood at a depth of 1374 feet under the edge of the crater. This depth, with the extent of the crater, which was about a mile in diameter, will convey an idea of the eruptions which formerly must have taken place in this volcano. The distance of this mountain from the sea coast is 38 geographical miles to the N.E.; and from Acapulco, towards the S., is from 32 to 33 miles. There are no records of this volcano’s having been in activity, and very few indications of lavas having flowed from it exist,

The limits of this Journal will only admit of one more extract, and selected from the author’s visit to the volcano of Jorullo:—

“ From the Rancho de la Playa de Jorullo the principal volcano lies

* In $19^{\circ} 7' N.$, $99^{\circ} 28' W.$ (J. Arrowsmith’s Map) Probably M. von Humboldt took Paris as his first meridian.—Ed.

about 2 leagues in an easterly direction. The lava streams, and the up-raising of the ground during the last eruptions in the year 1759, have extended themselves to the vicinity of this rancho; and the ground on this western side, to a distance of $1\frac{1}{2}$ to 2 leagues round the volcano, has been thrown perpendicularly up. By this upheaving a precipitous height of from 30 to 35 feet has been formed round the mountain, which is accessible only in a few points, and on this side cannot be approached without a guide. I examined this raised part of the ground in several points of its perpendicular sides, and found it to consist invariably of a lightish green, not very compact basalt, with many particles of olivine. From the exterior edge of this elevation, towards the principal volcano, the ground rises with a gentle slope, and it is 2890 feet high. This upheaved land was covered, when Humboldt visited it, with thousands of small cones, called hornitos: their temperature was very high, and they threw out watery vapour. In consequence of the heavy rains which fall in this climate, and the increasing vegetation, a great part of the cones, after a lapse of only twenty-four years, since Humboldt's visit, have entirely disappeared, and others have completely changed their form. Very few of them indicate a higher temperature than that of the surrounding atmosphere—and now hardly any of them evolve vapour. Near the edge of the upheaved ground the small cones are chiefly composed of loose, and often porous basaltic lava, containing much olivine in grains, but, more rarely, conchoidal augite."—p. 227, vol. i.

For a further description of this very interesting volcano the work itself must be consulted; and the following tables will give the heights barometrically measured by the author, and calculated with great care since his return to Europe.

Heights of Places above the Sea, determined by Barometrical Measurement.

I. Various Points in the Districts visited.

Places.	English Feet.	Places.	English Feet.
Acaponeta, village	213	Avaristos, rancho near Guanaxuato .	7,887
Aguas Buenas, a warm spring, near Guanaxuato	6,552	Barranca Dedo, not far from Zimapan .	5,548
Aguas Calientes (warm water), city	6,178	Do. Sonjon, near Villa Seca	5,377
Aguilar, farm near Zelaya	5,562	Bariga de Plata, mountain near Catorze	9,936
Amialco, a rancho near Tula	8,684	Buena Vista, on the road from San Blas to Acaponeta	313
Angangeo, house of the German Mining Association	8,519	Bufa of Guanaxuato	8,270
Angeles (angels), a mountain near Catorze	10,368	Cadereita, town	6,749
Anonas, rancho	1,313	Calera del Sauce, plain between Zacatecas and Ramos	6,745
Apaseo, a village	5,944	—, rancho in the plain between Veta Grande and Fresnillo	7,064
Arevalo, a mine	7,691	—, rancho near Queretaro	5,669
Arroyo Zarco, a farm	8,317	Cangaudio, mountain near Encarnacion, not far from Zimapan	9,130
Arroyo de en Medio, rancho near Fresnillo	7,043	Cantera, mountain near Catorze	9,669
Asientos de Ibarra, a mining station	7,064	Capula, village	7,553
Atotonilco el Chico, do.	7,739	Catorze, los Alamos de, mining station	8,785

Places.	English Feet.	Places.	English Feet.
Catorze, Cañada de, amalgam-house .	7,022	Jacal, or Nabajas, mountain near Real del Monte .	10,416
Charcas, mining station .	6,928	Javalí, rancho not far from Rio de las Balsas .	984
Charo, village .	6,105	Jordana, farm .	8,393
Cedral, do. near Catorze .	7,528	Jorullo, foot of the volcano .	2,890
Chichimiquillas, farm not far from Guanaxuato .	6,552	—— N.W. edge of the crater .	4,150
Cazadera, do. near San Juan del Rio .	7,629	—— N.E. edge of the crater .	4,124
Colorados, do. .	6,050	Lagos, city .	6,208
Cornejo, lake and rancho .	6,473	Lerma, town .	8,558
Comanja, mining station .	7,212	—— bridge not far from the farm La Jordana .	8,196
Comanilla, bath .	6,407	Leon, city .	6,006
Cross on the road from Chico to Pachuca .	9,339	Manzanas, brook near Real del Monte .	9,456
Crucitas, rancho .	830	Maravatillo, town .	6,735
Dedo, baranca near Zimapán .	5,548	Mesa del Cerillo, mountain near Zacatecas .	8,938
Dolores, galleries near Catorze .	8,685	Mesa da Tlalpujahuitla, mountain near Tlalpujahua .	9,739
—— shaft near Real del Monte .	10,060	Mezon de San Pedro, at Zacatecas .	7,305
Edificios, ruins not far from Zacatecas .	7,407	Mexico, capital .	7,426
Encarnacion, smelting-house not far from Zimapán .	7,486	Milagros, pit near Catorze .	9,150
Escalera, amalgam-house at Guanajuato .	6,870	Milpillas, rancho in the Sierra de San Mateo .	7,814
Esperanza, farm not far from Queretaro .	6,320	Mingoli, farm .	7,340
Estancia de la Vacas, cow-stall on the road from Tlalpujahua to Tula .	8,822	Moctezuma, Rio de, stream not far from Zimapán, on the Paso de las Maromas .	6,022
Etra, rancho not far from Zacatecas .	6,124	Moran, mouth of the galleries at Real del Monte .	8,402
Frayles, highest point in the Nevado de Toluca .	15,263	Nabajas or Jacal, mountain at Real del Monte .	10,416
Fresnillo, mining station .	7,227	Naranjo (orange), a rancho .	2,286
Gallo, mountain near Tlalpujahua .	9,239	Nevado de Toluca, highest rock, Los Frayles (the friars) .	15,263
Garcías, rancho de los, not far from Xeres .	8,288	Nevado de Toluca, edge of the crater .	15,076
Gilotepic, village .	7,842	—— surface of the lake .	13,847
Guadalupe el Carnizero, farm .	6,352	—— extreme limit of vegetation .	13,405
—— convent near Zacatecas .	7,475	Ordeña, shepherd's house on the Nevado de Toluca .	11,878
Guajicoria, village .	301	Oro, San José del, mountain .	8,459
Guajimalpa, farm .	9,474	Pachuca, mining station .	8,114
Guajijolote, mountain near Real del Monte .	9,512	Palma, rancho near Pinos .	6,823
Guajijolote, a rancho .	8,914	Panuco, smelting-house near Zacatecas .	7,621
Guardarey, pit near Comanjo .	7,650	Paso de Tierra Caliente, rancho .	1,851
Guanajuato, city .	6,869	Pate, warm springs and farm .	5,204
Hedehonda, rancho .	6,664	Patzcuaro, lake .	7,075
Hocotillan, rancho and warm spring .	8,241	Pechuga, mining station .	5,371
Height between Tlalpujahua and Angangeo .	10,466	Pederal, rancho .	6,624
Height between Estancia and San Andres .	9,423	Peregrino, pit near Guanajuato .	8,305
Height between San Andres and Gilotepec .	8,565	Popocatepetl .	17,773
Height between Tandeja and Tula .	7,811	Puerto de Casa blanca .	7,404
Height between Ilguautla and Chico .	9,443	Puerto del Campo Santo, near San José del Oro .	8,509
Height between Chico and Real del Monte .	9,684	Puerto Ismiquilpan de .	8,303
Height between Tlalpujahua and Tepetilan .	9,072	Puerto, between the ranchos Majadas and Pilas .	6,022
Huerta, farm near Tula .	9,268	Puerto San Pedro, near Xeres .	8,671
Ilguautla, village .	7,994	Puerto S. Rumo, near Guanajuato .	8,142
Indaparapeo, village .	6,345	Puerto Santa Rosa, at Guanajuato .	8,932
Ismiquilpan, village .	5,584		
—— Puerto de .	8,303		
Ixtlahuaca, or Ixtlahuaca .	8,293		

Places.	English Feet.	Places.	English Feet.	
Punta, farm at Zacatecas	6,411	San Juan del Rio	6,433	
Purissima Concepcion, pit at Catorze	9,824	San Juan, shaft near Real del Monte	9,382	
Purissima Concepcion, smelting-works at Chico	7,356	San Juan del Tusal, rancho on the road to Catorze	6,793	
Quates, farm at Cadereita	6,696	San Lorenzo, chapel near Tlalpujahua	8,466	
Quemada, farm at Villa Nueva	6,537	San Mateo, farm not far from Mexico	7,651	
Quemado, Cerro, at Catorze	9,358	San Pablo, farm near Pechuga	4,791	
Queretaro, town	6,076	San Pedro de la Boca, village near Xeres	7,163	
Ramos, mining station	7,008	San Pedro, puerto, not far from Xeres	8,671	
Rayas, head shaft of the pit Rayas, at Guanaxuato	7,270	San Pedro de Tlacuapan, near Tula	6,732	
Real del Monte, mining station	8,937	San Rafael, mountain near Guanaxuato	9,078	
Refugio, galleries at Catorze	8,668	San Rafael, smelting-works near Aguas Calientes	8,591	
Regla, smelting and casting works at Real del Monte	6,610	San Jacinto, farm between Zacatecas and Aguas Calientes	6,453	
Rio (stream), Afadijo, at Tusatlna	4,579	Santa Cruz, farm at Fresnillo	7,007	
Rio Grande de Santiago, at Lerma	8,558	Santa Rosa, mountain not far from Tlalpujahua	9,252	
Rio Grande de Santiago, near Istlahuaca	8,293	Santa Rosa, shaft of the pit, Rayas at Guanaxuato	7,203	
Rio Grande de Santiago, near La Jordana	8,196	Santa Rosa, puerto, not far from Guanaxuato	8,932	
Rio Grande de Santiago, on the road from Bolaños to Tepic	575	Tajamani, farm	2,792	
Rio Moctezuma, on the Paso las Maromas near Zimapán	4,769	Tandeja, farm near Tula	7,421	
Rio las Balsas, near Sirisicuaro	879	Tarimangacho, mountain at Tlalpujahua	10,186	
Rio las Balsas, near the farm Cutío	697	Tecama, village near Mexico	7,206	
Rio San Pedro, near Santiago	180	Temascalito, farm not far from Guanaxuato	5,866	
Rio Zitacuaro, near Tusatlna	2,191	Tepeitlán, farm not far from Tlalpujahua	8,368	
Rio Zitacuaro, near Tiquicheo	1,455	Tepesala, mining station not far from Asientos de Ibarra	6,939	
Rosa Morada, farm	196	6,939	Tiquicheo, village by the Río Zitacuaro	1,455
Saca Mecate, rancho in the mountains of Xeres	8,321	Tigre, rancho near Villeta de la Encarnación	6,169	
Salinas, village and lake	6,653	Telepango, farm near Tula	6,851	
Sancanguerito, rancho	2,409	Tlalpujahua, mining station	8,388	
Sanchez, smelting-works near Real del Monte	8,022	Trinidad, pit near San José el Oro	7,956	
Sauceda, farm in the valley of Valparaíso	6,157	Trujillo, farm near Fresnillo	6,905	
Sauces, Mezón between Lagos and Aguas Calientes	8,379	Toluca, town	8,698	
Serena, mountain near Guanaxuato	5,809	Toliman, near Zimapán	4,973	
Silao, small town	9,806	Tula, by the Río Moctezuma, town	6,783	
Somera, mountain near Tlalpujahua	8,638	Tulancalco, farm near Tula	7,011	
San Andres, village	8,706	Tusantla, village	2,117	
San Christobal, mouth of the galleries near Tlalpujahua	8,708	Valladolid, village	6,291	
San Esteban, discharging-place at the shaft near Tlalpujahua	8,341	Valparaíso, bath	6,398	
San Felipe, village not far from Tlalpujahua	7,305	Villalpando, pit not far from Guanaxuato	8,457	
San Felipe, stream between Angangeo and Zitacuaro	6,909	Villalpando, mountain	9,453	
San Felipe, village not far from Guanaxuato	5,833	Villa Nueva, small town	6,281	
Santiago, village not far from San Blas	116	Villa Seca, mountain not far from Zimapán	7,148	
San Isidro, rancho not far from Catorze	8,368	Zamora, mountain near Ramos	7,763	
San José, stream between Tlalpujahua and Angangeo	8,459	Zimapán, mining station	5,624	
San José del Oro, chapel on the mountain not far from Zimapán	5,833	Zitacuaro	6,453	

II. Section of the Mountains from San Blas, through Tepic, Bolaños, Zacatecas, San Luis Potosí, and Tula, to Tampico de Tamaulipas.

Heights measured above the Level of the Sea.			
Places.	English Feet.	Places.	English Feet.
San Blas, port-town	90	Cacalote, rancho	6,185
Lajitas, rancho	2,552	Xeres, town	6,592
Tepic, town	2,930	Veta Grande, mining station	8,550
Mora, sugar-plantation	2,882	Zacatecas, town	7,978
Pochotitlan, village	2,607	Angel, mountain	8,949
Rio Grande, bed of the river in the road	575	Sauceda, smelting-works	7,530
Paraje de los Bancos	2,880	Ojocaliente, town	6,716
Cuesta de Halica	5,793	Santiago, mountain	8,530
Cuesta de los Huicholes	3,927	La Blanca, smelting-works	6,723
Huasquimia, rancho	3,710	Angeles, mining station	7,474
Height between Camotlan and Huasquimia	7,316	La Palma, rancho	6,823
Comotlan, farm	3,868	Peñon Blanco, mountain	8,917
Mouth of the stream Tlascala into the Camotlan	3,569	Pinos, mining station	7,982
Cuesta de Tlascala	7,323	Cerro de la Cruz, mountain	9,637
Chibo, mountain east of the road	8,900	Sauce Gordo, rancho	6,775
Berberia, rancho	8,130	San Luis Potosí, town	5,961
Bolaños, market-place, cashier's office	3,090	Peotillas, farm	4,829
Bolaños in the despacho	3,173	Guaji, rancho	5,706
Aguila, mountain	5,486	Guadalcazar, mining station	5,236
Pinal, mountain, eastern summit of	7,526	Hincada, farm	3,709
Salitre, village	5,826	Tula, village	3,844
Tototiche, village	6,059	Puerto de los Gallos, mountain	4,604
Atotonco, rancho	5,896	Cuesta de la Contadera	2,790
Cartagena, village	5,330	Santa Bárbara, village	1,134
Colotlan, village	5,560	Rio Limones, stream and rancho	128
Santa Maria, village	5,661	Horcasitas, village*	82
Santa Maria, mountain	7,503	Gualful, rancho	205
		Esteros, small lakes	40
		Altamira, village	90
		Tampico de Tamaulipas, town	50

III. Heights determined in the Mountains of Zacatecas.

1. Valley of Zacatecas.		Places.	English Feet.
Places.	English Feet.		
Height near Cata de Mulas	8,614	Smelting-works, San Tadeo	7,698
Grube San Bernabe, principal shaft	8,379	Guadalupe	7,564
Powder-mill of Bracho	8,121	Sauceda	7,530
City of Zacatecas	7,978		
Smelting-works, Florida	7,745		
Granja	7,560		
Bermudez	7,673		
Stream below the Convent, Guadalupe	7,475		

2. Valleys of Leones and Polvorista.		Places.	English Feet.
Places.	English Feet.		
Puerto San Francisco	8,789		
Smelting-works, in ruins, Leones	8,203		
Polvorista	7,560		

3. Valley of Sauceda.		Places.	English Feet.
Places.	English Feet.		
Puerto de Veta Grande	8,773		

4. Valley of Arzola.		Places.	English Feet.
Places.	English Feet.		
Puerto between the mountains of San Felipe and Bisnaja			8,316
Junction of the Valleys of Arzola and Anis			7,491
Arroyo Arzola in the plain			7,320

5. Valley of Panuco.		Places.	English Feet.
Places.	English Feet.		
Puerto, near la Virgenes			8,302
Noria, near Buen Suceso			7,676
Bed of a river below Panuco			7,557
Gutierrez, rancho			7,316

6. Valley of La Sacra Familia.		Places.	English Feet.
Places.	English Feet.		
Point where the Aqueduct of Zaca-			
tecas begins			8,045

* This and the four following heights appear not to be entirely free from error, as a high wind caused the barometer to fall very low.

Places.	English Feet.	14. Heights of chains and single mountains.	Places.	English Feet.
Smelting-works, Cinco Señores	7,941	Cerro Milanesa	8,659	
Huerta Senguilla de arriba	7,615	— San Acasio	8,904	
— de abajo	7,553	— el Angel	8,949	
		— Miradillo	8,426	
		— Maestrante	8,459	
		— Papanton	8,303	
		— Cautera	8,124	
7. Valley of Pimienta and Calabera.		— Guerreros	8,005	
Puerto del Cerro Plomoso	8,548	— Aqua Salada	8,094	
Bed of a river near the pit of Nueva Valenciana	8,093	— Buenavista	8,532	
Bed of a river	7,845	— San Martin	8,602	
Plain	7,619	— la Bufa	8,859	
		— del Infante	8,111	
		— Matapulgas	7,705	
		— Mesa del Cerrillo, highest point S.E. point of the same	8,938	
		— las Canteras	7,956	
8. Valley la Plata.		— los Padres	8,385	
Puerto de Malanoche	8,491	— las Huertas	8,178	
Smelting-works, la Plata	8,136	— la Nueva Valenciana	8,392	
Garden of el Gil	7,888	— la Pimienta	8,248	
Plain below the Ladrillera	7,618	— San Jorge	8,437	
		— Plomillo	8,497	
		— Calicanto	8,894	
9. Valley la Chica.		— Magistral	8,664	
Puerto de la Veta Grande	8,773	— Frijol	8,429	
Smelting-works, la Chica	8,236	— la Sierpe	8,688	
First house of Hacienda Nueva	7,845	— el Gil	8,513	
Plain below la Troja	7,642	— la Chica	8,912	
		— Desierto	8,233	
		— la Palma	8,109	
10. Valley of Bracho and la Pila.		Pits of Guadalupe, near Veta Grande	8,173	
Puerto, near Teposan	8,643	Llano de las Virgenes	8,302	
Rancho Bracho	7,810	Pit of Descubrimiento	7,825	
Plain below the rancho la Pila	7,570	Cerro del Pilar, near Chupaderos	7,852	
		— Armados	8,720	
		— Zapopa	8,071	
		— Don Antonio, beyond Muleros	8,156	
11. Valley of Chupaderos.		— Caroza	8,039	
Pit Gallega	8,470	— San Felipe	7,999	
Bed of the river above Chupaderos	7,618	— el Moro	8,000	
Plain below Chupaderos	7,544	— de los Tajos de Panuco	7,904	
		Loma de San Joaquim	7,773	
12. Valley of Muleros.		Cerro Tescuco	7,886	
Puerto de Armados	8,696	— Bisnaga	8,427	
Road from Guadalupe to Panaco, in the bed of the river	8,014	— Lechuguilla	7,997	
Plain below Muleros	7,514	— Palenque	8,460	
		— Quemado	8,065	
13. Ridge dividing the waters between the two plains of Bañuelos and Fresnillo.		— Hornitos	8,081	
Highest point on the Mesa del Cerrillo	8,938	— Tadeo	8,301	
Cerro del Viejo	8,229	— Saucillo	8,215	
Shaft of the Aqueduct of Zacatecas	8,045	— Saucedo	7,983	
Cerro del Grillo	8,721			
Cerro de la Llamarada	8,552			
Cerro de la Malanoche	8,672			
Llano de los Loyotes (pit Concordia)	8,580			
Cerro del Huachichil	8,890			
Cerro Milanesa	8,859			
Cerro Armados	8,720			
Llano las Virgenes	8,302			
Mountain on the road to Matapulgas	7,999			